Office Copy

CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society
Of America

VOL. VI. JULY, 1934 No. 1

NATHANIEL L. BRITTON. This photograph was made from a painting of Dr. Britton in 1902.

CACTUS AND SUCCULENT JOURNAL
Published and Owned by
The Cactus and Succulent Society of America, 6162 N. Figueroa St., Los Angeles, California (Mail Address Only)
A monthly magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. "The Cactaceae," by N. L. Britton and J. N. Rose, has been adopted by this journal for purposes of identification. (Membership and subscription $3.00 per year, foreign $3.00 per year.) Mail membership application to the Society at 6162 N. Figueroa Street, Los Angeles, Calif. ($3.00 MUST accompany the application.) *Managing Editor,* SCOTT HASELTON, 6162 N. Figueroa St., Los Angeles, Calif.; *Assistant Editor and Chairman Membership Committee,* H. WESTON; *Editorial Staff,* JAMES WEST, 745 Fifth Ave., San Rafael, Calif.; ERIC WALTHER, 2667 McAllister Ave., San Francisco, Calif.; EDGAR M. BAXTER, Bellflower, Calif.

Vol. VI. JULY, 1934 No. 1

CONTENTS

New Neomammillarias from Mexico ..... Howard E. Gates 3
Question Page 6
On Pronouncing of Scientific Names ..... Robert S. Woods 7
Britton and Rose Reprint ..... Center Section
Editorial ..... Scott E. Haselton 9
Grafting ..... Gilbert Tegelberg 10
Succulent Illustrations, Pedilanthus macrocarpus ..... Eric Walther 11
California Cacti ..... E. M. Baxter 12
President's Column ..... Charles Gibbs Adams
Mammillaria crucigera ..... Ernest Tiegel 14
What Grows Where ..... Mrs. John D. Wright and Anne Smith 15

NATHANIEL L. BRITTON

Our best friend, Dr. Nathaniel L. Britton, has crossed the great divide. He has followed his great collaborator, Dr. J. N. Rose, into the great unknown.

Beside a long list of masterly botanical publications the Doctor has left two great monuments; his Monograph "The Cactaceae" and the New York Botanical Gardens.

Into both these monuments went much of Dr. Britton's private fortune.

Less enduring, but of priceless value, is the memory of the thousand acts of kindly helpfulness to those who labored in the same field. Honorary President of the Cactus and Succulent Society of America, he was not only the first to give substantial financial assistance to the then infant society, but bravely loaned his name and prestige to this as yet, untried group.

We are thankful that he has expressed himself as being repeatedly gratified by the growth and work of the Society which we know was greatly the resultant development of his confidence and help.

What we, as members of this Society, owe to Dr. Britton, can never be fully appreciated.

Wherever your journey leads you, dear friend of mine, the footprints you have left in the sands of time will be followed by us, your students, with veneration, respect and loving care . . . Vale!

DR. A. D. HOUGHTON.

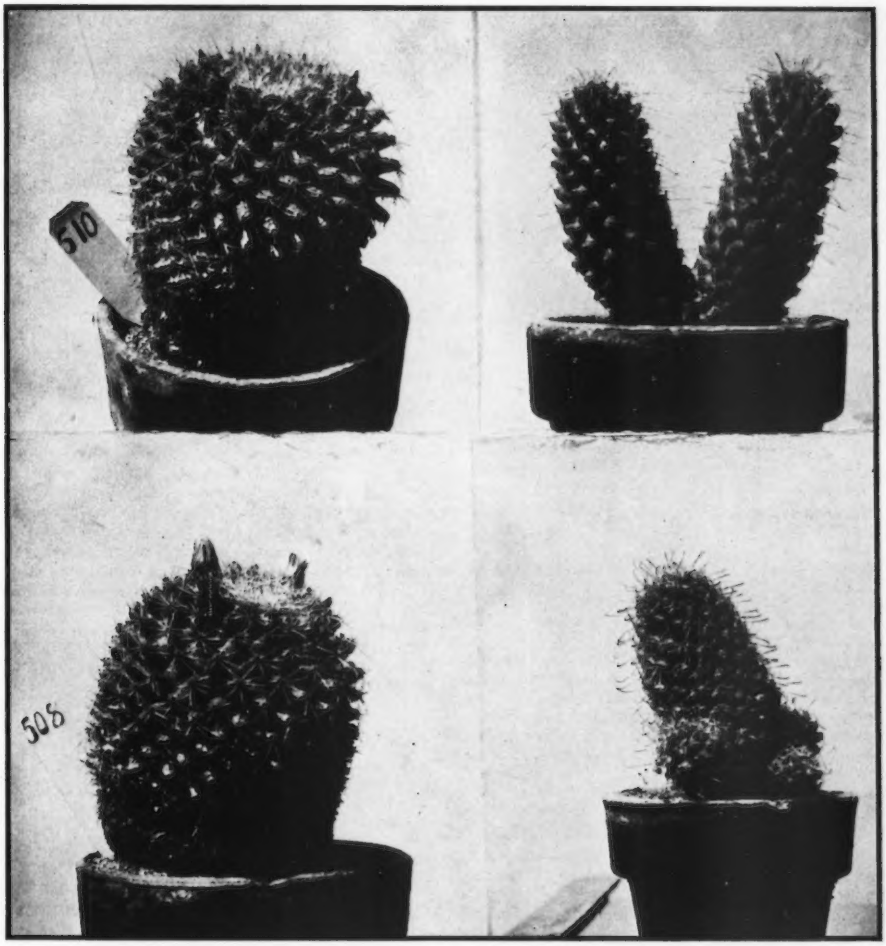
Should Argyroderma testiculare be allowed to dry and shrivel during our New Jersey summer, or is it advisable to water sufficiently to prevent drying?—C. P., New Jersey.

All of the fleshy, low growing South African plants, including the Mesembryanthema, Stapelias and Haworthias, have in common with the American cacti a resting period, and during this season which is usually our summer months, this idiosyncrasy must be kept in mind. However, no plant should be allowed to dry and shrivel to such an extent as to injure permanently the vegetative tissue. Generally speaking, water sparingly during your hot summer month, keeping the plant in a healthy, normal condition, but as soon as new growth appears it should be watered more frequently. Great care should be exercised in watering if the plant is not well established, especially in the dormant period.—C. L. C.

CACTUS CULTURE

This is the most up-to-date, practical and comprehensive book published on the culture of Cacti. The most experienced as well as the beginner will find in this book suggestions which will prove both profitable and interesting. 186 pages 5½x8 with fabrikoid binding. Price $2.00. Cactus Society.

BOUND VOLUMES of the Cactus Journal, Vol. I, II, III, and IV, are now on sale; these will be very valuable before many years, so take advantage of the opportunity at this time. Volume I $9.00, Volume II, III and IV at $6 each.



Neomammillaria baxteriana
Neomammillaria marshalliana

Neomammillaria bullardiana
Neomammillaria hutchisoniana

New Neomammillarias from Mexico

By HOWARD E. GATES

Photos by Howard E. Gates

Neomammillaria baxteriana **Howard E. Gates**
sp. nov.

Planta depressa, solitaria, saepe caespitosa, depresso rotundata, 10 cm. lata; tuberculis conicis, ochro-viridibus, lactatis; axillis brevo - albo - tomentosis omnino; areolis rotundis, brevo, albotomentosis; spinis radialibus 8-10, acicularibus, patentibus, albis, interdum jucundis, fuscis ad apicum, superioribus 1 cm. longis, inferioribus 15 mm. longis; spina centrali plerumque una, 15-20 mm. longa, aciculari, alba cum fusca ad apicem, descenti-albo omnino; flore ochra est, segmentis exterioribus parce coccineo lineatis; stigma sudo-ochrata, 9-lobato; filamentis albis; antheris ochroleucis; fructu purpureo-coccinei, clavati 2 cm. longis, nudis; seminibus fusco punctatis, parce 1 mm. longis. Typi Gatesii numerus 510 in Herbario Dudleyi Stanford University, California est.

Plants deep seated, solitary, occasionally cespitose, flattened globular to 10 cm. in diameter, tubercles conic, yellow green, milky; axils short white wooly throughout; areoles circular, short white woolly; radial spines 8-10, acicular, spreading, white, occasionally brown tipped in youth, 1cm. on upper side of tubercle to 15 mm. below; central spines usually 1, 15-20 mm. long, acicular, white with brown tip becoming all white; flower yellow, light reddish markings on outer perianth segments; stigma pale yellow, 9 lobes; filaments white; anthers cream; fruit purple-red, clavate, 2 cm. long, naked; seed brown, punctate, less than 1 mm.

Type collected on white granite cliffs at Vin Ramos, a ranch southeast of La Paz, Baja, California, (Lat. 24° 05′ N., Long. 110° 15′ W.) Mar. 20, 1933. The specific name is in honor of Edgar M. Baxter of Bellflower, Calif., an enthusiastic student and collector of both Californian and Peninsular cactus species. This plant is only known from the granite cliffs bordering a dry river bed at the type locality.

Neomammillaria bullardiana Howard E. Gates sp. nov.

Plantas uberiter caespitosis; ramis cylindricis, 12 cm. longis, 4 cm. latis; tuberculis tenerribus, conicis, intumescentibus ad basem, 8 mm. longis, olivaceo-viridibus; axillis nudis, sed minute-lanatis cristatis; areolis rotundus; pinis radialibus 20-30, patentibus, acicularibus, 5-10 mm. longis, albis, saepe extremitatibus parce fuscis; spina centrali una, 1 cm. longa, parva clavata, fusca; flores 2 cm. longae, 25 mm. latae sunt, coluscantes parce coccineae, exterioribus segmenti nigioribus linis; stigma exsertum est, lobis 6, subviridibus; filamentis et antheris croceis; fructu brevi-clavato, 2-3 cm. sub apicei, 2 cm. longis, 6 mm. latis, coccineo, nudo; seminibus nigris, punctatis, parce 1 mm. longis, Typi Gatesii numerus 500 in Herbario Dudleyi, Stanford University, California est.

Plants freely cespitose, branches cylindrical to 12 cm. by 4 cm.; tubercles, slender, conic with enlarged base to 8 mm. long, olive green; axils naked except for minute lanate tuft; areoles circular; radial spines 20-30, spreading, acicular, 5-10 mm. long, white often with pale brown tips, central spine 1, 1cm. long, small hooked, brown; flower 2 cm. long, 25 mm. wide, flaring, pale pink with few darker markings on outer perianth segments; stigma exserted, 6 greenish lobes; filaments and anthers yellow; fruit 2-3 cm. from top, short clavate, 12 mm. by 6 mm., scarlet, naked; seed black, punctate, less than 1 mm.

Type collected under brush and giant cactus on sandy plain bordering the southwest portion of La Paz, Baja, California, (Lat. 24° 08′ N., Long. 110° 20′ W.). The specific name is in honor of Howard O. Bullard of Hackensack, New Jersey, an enthusiastic fancier and a Vice-President of the Cactus and Succulent Society of America.

This species is only known from the type locality where it is not plentiful owing to its habit of growing on flat, silty soil where it is easily destroyed by grazing cattle. Though one of the smallest of the Lower California species this grows readily under cultivation forming very beautiful plants.

Neomammillaria marshalliana Howard E. Gates sp. nov.

Planta depressa, saepe caespitosa, plano-globulari, 12 cm. lata; tuberculis elongatis, 12 mm. longis, angularibus, azureo-viridibus, lactatis, axillis parce tomentosis; jucundis areolis, albo-tomentosis, lanatis jucundis, nudis ad maturitatem, rotundis; spinis radialibus 8-13, abnormalibus, 1 cm. longis, patentibus, albis cum apicibus nigris, convenientibus omnino albis; flore virido-fulva, 15 mm. longa, 2 cm. lata; exterioribus segmentis purpureis mediis, interioribus segmentis integerrimis, parce, virido-fulvis; stigmati viridio-fulvo, 8-lobatio, longiori staminibus; antheori numerosa, parce fulvae; fructu ignoto. Typi Gatesii numerus 508 in Herbario Dudleyi, University Stanford, California, est.

Plants deep seated, occasionally cespitose, flattened globular to 12 cm. in diameter; tubercles elongate to 12 mm. angular, blue-green, milky; axils slightly woolly, young areoles white woolly, older ones naked, circular; radial spines 8-13, irregular length to 1 cm., spreading, white with dark tips becoming all white; central spines 1, 1 cm. or less long, white with dark tip, becoming all white; flower greenish yellow, 15 mm. long, 2 cm. wide, outer perianth segments with purplish mid rib, inner segments entire, light greenish yellow; stigma greenish yellow, 8 lobes, longer than stamens; anthers numerous, light yellow; fruit unknown.

Type Gates No. 508 collected on granite cliffs in river canyon two miles below San Bartolo, Baja, California, (Lat 23° 40′ N., Long. 109° 50′ W.), Mar. 16, 1933, and deposited in the Dudley Herbarium of Stanford University. The specific name is in honor of William Taylor Marshall, of Los Angeles, Calif., who underwent great hardships on the discovery trip. The distribution is apparently confined to narrow canyons in the low mountains surrounding San Bartolo.

Neomammillaria hutchisoniana Howard E. Gates sp. nov.

Caespitosa, ramis cylindricis, 15 cm. longis, 4-6 cm. latis; tuberculis brevibus, conicis, olivaceo-viridibus, seape purpureo-nigris, non lacteis; axillis denudatis; spinis radialibus 25-35, purpureis, nigris sobolibus, statim albis, divaricatis, 5-8 mm. longis; spinis centralibus plerumque 3, 8 mm. longis, una elongatiore, parva clavata, apice purpureo, albo infra; flore ochroleucis; segmentis lanceolate - acuminatis, marginibus erosis; fructu coccineis, 2 cm. longis. 1 cm. latis; semini nigris, punctatis. Typi Gatesii Numerus 121 in Herbario Dudleyi, Stanford University, California, est.

Cespitose, branches cylindrical to 15 cm. long by 4-6 cm. in diameter; tubercles short, conic, olive green, often shaded with purple, not milky; axils naked; radial spines 25-35, purple to black in youth

soon turning white, wide spreading, 5-8 mm. long; central spines usually 3, 8 mm. long, one more elongated, small hooked, purple tipped, white below; flower creamy white, perianth segments lanceolate, acuminate, margins erose; fruit scarlet, clavate, 2 cm. long by 1 cm. wide; seed black, punctate, less than 1 mm.

Type collected on silty bottom land, eight miles west of Calmalli, Baja, California, (Lat. 28° 15′ N., Long. 113° 40′ W.), July 22, 1932. The specific name is bestowed in honor of the discoverer's companion, Mr. Ted Hutchison of Azusa, Calif.; an earnest collector in the northern district of Lower California and now Secretary of the Cactus and Succulent Society of America. The distribution of this species is apparently restricted to the silty and sandy reaches of the northern portion of the Vizcaino Desert.

Neomammillaria pacifica **Howard E. Gates sp. nov.**

Breve, plerumque caespitosa, saepe divisa capitulo, globulare cum apice depressave trunvata, unicis plantis 15 cm. altis et latis; tuberculis compactis, parce quadrangularibus, elongata, 13 mm. longis, nigro-viridibus, lacteosis; axillis florum tomentosis, senioribus et junioribus parce lanatis; areolis circularibus, lanatis jucundis, nudis maturitatem; spinis radialibus 7-12, albis, junioribus pullis ad apices, divaricatis, aciculari-bus, ascendentibus, superioribus 5 mm. longis, inferioribus 10 mm. longis; spina centrali una, 10-15 mm. longa, rigida, acicularia, pulla ad apicem; floribus chloroticis; petalis nigris mediis, 1 cm. longis, acutis, intererrimus, purpureis extus; fructibus ignotis. Typi numerus 505 Gatesii est in Herbario Dudleyi Stanford University, California.

Deep seated, frequently cespitose, often branching by division of growing heads, globular with flattened or depressed top, single branches to 15 cm. in height and diameter; tuburcles closely set, slightly four-angled, elongated to 13 mm., dark green, milky; flowering axils lanate, older and younger axils slightly lanate; areoles circular, lanate in youth, naked in age; radial spines 7-12, white with brown tips in youth, spreading, acicular, up curved, 5 mm. on upper side of areole to 10 mm. on lower; central spine 1, 10-15 mm. long, stiff, acicular, brown tipped; flower greenish yellow, mid ribs darker, perianth segments 1 cm. long, pointed, edges entire, outer segments with purplish midribs, fruit not observed.

Type collected under trees on silty bottom land 8 miles north of Todos Santos, Baja, California, (Lat. 23° 40′ N., Long. 110° 15′ W.) Mar. 13, 1933. The specific name is derived from its occurrence on the Pacific littoral of the Cape District. It is one of the largest of the milky type of Neomammillarias found in Lower California. Several fasciations were noted at the type locality. The distribution is probably limited to a low coastal area at the junction of the temperate and torrid zones.

Neomammillaria pacifica

The number and great variety of Neomammillarias in Lower California, Mexico, especially in the southern or Cape district is amazing. They are everywhere from the seashore to the tops of the high mountain ridges. With the publication of the accompanying descriptions the number of known peninsular Neomammillarias is increased by eight as a result of my collecting trips, to which must be added Baxter's *N. phitauiana* and there are several more still under observation.

The Latin descriptions accompanying were prepared by the late Prof. Marcus E. Jones of Claremont, California.

* * *

Some incidents must be retold over and over again in order that certain nature "highjackers" may not forget. We have written three times in as many months of what happens to "Cactusleggers" in the Ajo district of Arizona. Last month another one of these benevolent "cactus-snipers" who tells us he is so interested in seeing that science has ample material to work on that he dug up whole truck-loads of cactus, was locked up in the Ajo jail. It is so monotonously necessary for us to retell it again and again that we believe fully in the idea that constant irritation of this nature by the sheriff of Ajo will some day bring results.

QUESTIONS

I have been interested in cacti for years and at present have a small miniature collection that I have assembled since 1927 in a large flat bowl about 14 inches in diameter and about 4 inches deep.

The soil I use is a mixture of 2/3 garden loam and 1/3 river sand to which was added a little lime. From time to time, just before a watering period, 1½ Fulton's plant tabs 11-15-20 are broken up and the pieces imbedded in the soil. There is no drain hole in the bottom of the bowl, but the bottom interior is lined with porous rock.

Each year, from September to May inclusive, the cacti have been kept near a southern exposure window in a steam-heated apartment. The balance of the year they have been kept at an open window, same exposure. During winter months there are many sunless days, often for a week at a time.

Three syringe bulbs of lukewarm water are sprayed on the cacti the first day of each month. During summer months they receive an extra bulb full once a week.

The growing season in this latitude seems to be from June 1 to August 31, a period of hot summer weather with daily temperatures ranging from 75° F. at night to 105° F. in the middle of the afternoon. Up to the summer of 1932 they all did well. In 1933 growth was not up to the average. None of the cacti have ever flowered.

What should be added to the soil to promote healthy growth and induce flowering, bearing in mind that I do not wish to replant the bowl as I find that disturbing the roots of cacti sets them back a year or more?

What change would you suggest in the watering schedule? The general year 'round condition of the soil is what I term dry.

Is the apartment air with a winter humidity of 35-40 too dry and a summer humidity of 50-60 too moist?

Appreciating and thanking you for your kindness,

WM. S. JOHNSTON, Pa.

Bowls are not intended for the raising of flowering plants—they are planted for beauty of form and arrangement. They are decorative objects and unless ideal conditions of light are given, are not usually productive of much bloom.

Cut flowers are bought to be thrown away in a short time; bowl arrangements are decorative for a longer period but are not intended to be permanent plantings.

If you want flowers and growth, separate the plants into individual pots with drainage and new soil, and give more direct sunlight. The root systems have become interlocked, starving the plants. Your soil is right; the difficulty is etiolation, or lack of sunlight.

Your watering and air conditions are right.

A. D. HOUGHTON, M.D.

Is the Latin language employed in the botanical world, in naming the different species of world flora?

Are these names universal?

Or, in other words, is the botanical language universal?

This was one of the fundamental teachings I was taught when I studied Botany in Sweden. That is, that the pronunciation of the name in the botanical language was to be in Latin. But when I came to the United States and, in recent years, entered into the study of the Cactus Flora, I have found that the Latin language is only employed where it is convenient. For instance, Colyphantha Clava, otherwise in most cases it is pronounced as if spelled in English; for instance, Covellii is pronounced with the English "i" instead of the Latin "i" as in Dei, or the word Agregata, where, I have heard, the second "a" is pronounced as in English "base" instead of the Latin "a" as in Agnus.

I have corrected several of my Cactus friends to this effect, that is, to use the Latin language, but when I heard a lecture the other day by one of the most outstanding specialists of the Cactus Flora, using the half and half language referred to above, I wonder if I am not on the wrong side of the fence.

I am either right or wrong, it can't be any half way between in a scientific language. I would appreciate very much hearing your opinion.

The same argument holds good in using the half and half English and Latin languages in the description of the different species.

For a beginner, and for one who has not a thorough knowledge of the Latin language, it is almost impossible to classify, especially the opuntias, in spite of the Glossary which you have printed in Volume III, page 29, and the Glossary in Dr. Houghton's book.

Thanking you sincerely for any information you may be able to give me,

GUSTAV STARCK.

Mr. Robert S. Woods' article on the following page answers this question.

On Pronunciation of Scientific Names

By ROBERT S. WOODS

Many people, no doubt, feel that the formidable scientific names are the principal obstacle to the study of any of the various branches of natural history. It is plain, however, that there must be some way by which any given form of animal or plant may be definitely indicated so that it can be distinguished from every other form of life and its identity recognized in every country of the world, no matter what language is spoken. Admitting the necessity for such names, a study of their origins and the rules governing their use will do much to rob them of their terror.

The father of systematic scientific nomenclature was the great Swedish botanist, Linnaeus (1707-1778). Inasmuch as Latin was the medium for a large proportion of the scientific writing of that day, and the name *Linnaeus* was itself a Latinized form of the botanist's real name, von Linné, it is only natural that this language should have been the basis for the system which he originated. Since, however, the rather limited resources of the Latin language were hardly equal to the magnitude of the task, it was necessary also to call upon the far richer vocabulary of the ancient Greek. It is from these two languages that the great majority of our scientific names are derived, though a certain number of words from other languages have crept in, and liberal use has been made of proper names, especially for species and subspecies.

Many names are formed by combining two or more words. Properly, these words should be taken from the same language, though this rule is not always followed. For example, the name of a well-known genus of conifers, *Pseudotsuga,* was characterized by Dr. C. S. Sargent as a "barbarous combination" of the Greek *pseudo,* false, and Japanese *tsuga,* hemlock.

Probably all will agree that most scientific names are better adapted to written than oral use; they are apt to be pronounced in a variety of ways, according to personal taste or local custom. But general usage is not, as with ordinary English words, the true criterion as to the pronunciation of names coming into our language from the Latin or Greek, for there are definite rules covering these cases, though, unfortunately, Green and Latin dictionaries may be required in order to obtain the data upon which to apply the rules.

Following a rather peculiar but well-established custom, words derived from the Greek must be accented according to the Latin rules. Classic Greek permits the accent to fall on any of the last three syllables of a word if the ultima, or last syllable, is short, and on either of the last two if the ultima is long. In Latin, on the other hand, the accent is rigidly prescribed, and falls on the penult, or next to the last syllable, if that syllable is long in quality, or if the word has only two syllables; otherwise the antepenult, or third from the end, is accented. The penult is long if it contains a long vowel (a diphthong is always long), or if the vowel is immediately followed by *x, z* or any two consonants (alike or different) except a mute with *l* or *r*. In the latter alternative the spelling of the word is sufficient indication of its accent, but in the former case, a dictionary may be needed to determine the nature of the vowel, as in the words *nó bi-lis* and *se-ní lis.* It is useful to remember that a vowel before another vowel is short, as in the endings *-ia, -ea, -ium,* etc.; also that in all of the common terminations *-atus* (*-ata, -atum*) ,*-alis, -aris, anus, -inus* and *-osus,* the penultimate vowel is long, thus causing that syllable to be accented.

A Greek word contributing largely to cactus literature is AKAVOA (*á kan-tha,* thorn), which with Latin accent and spelling becomes *a-can' tha.* KAPNOS (*kar-pos',* fruit) *becomes car' pus.* In EXIVOS (*e-chi 'nos,* hedgehog) the circumflex accent mark shows that the *i* is long, so the accent does not change.

A name formed by the combination of two or more words is accented as a unit, without reference to the accents of the original words, as: *ver-si'co-lor.* Secondary accents follow the same rules as primary, as in *E-chi"no-fos"su-lo-cac'tus.*

In what is known as the English method for the pronunciation of classical names, the letters are given their usual English sounds, except that *ch* is always pronounced like *k*. This is the system commonly used in both science and literature, though much might be said in favor of the adoption for scientific purposes of the Continental or the Roman method, in both of which the vowels are pronounced much as in the principal languages of continental Europe and Latin America.

Cactus wren on *Opuntia occidentalis*
The shrunken joints of the plant show the effect of a long dry summer. Taken at Azusa, Cal., by R. S. Woods.

All vowels have either a long or a short sound, the choice of which is not necessarily determined by their original quality, but by their position, according to rules rather too complicated to be fully set forth here. The most important rule may be briefly paraphrased as follows: When the penult is accented and its vowel is separated from the succeeding vowel only by a single consonant (except *x*) or by a mute *l* or *r*, the vowel of the penult takes the long sound; otherwise it has the short sound. This rule does not apply to the antepenult, in which the vowel is more often given the short sound. In unaccented syllables the vowels usually have the short sound, though the reverse is true in the endings *-es*, *-os* and *-i*.

Proper names often have combinations of letters which are not amenable to Latin rules, thus giving rise to legitimate differences of practice in the pronunciation of generic and specific names derived from them. In the case of most non-classical words, especially names of persons, it would seem proper to retain the original pronunciation, except insofar as the addition of syllables might require a shifting of the accent for the sake of euphony.

In forming the genitive case of proper nouns, as used for species and subspecies, either *i* or *ii* has been added without apparent distinction. The American Ornithologists' Union, in its Check-List, has dropped the second *i* in all cases where it occurred, except when the original name ended in *i*. This change, while not approved by all systematists, not only makes the words less awkward to pronounce, but removes the chronic uncertainty as to the number of *i's* in each particular instance.

Zygocactus truncatus from Brazil

The following 8 pages are from Vol. I. THE CACTACEAE.

EDITORIAL

This issue of the CACTUS JOURNAL marks the sixth year of publication. Having weathered the uncertainty of the last three years there is no doubt but that this year can be a year of accomplishment. Many helpful suggestions are being made and the Editor will appreciate others that will help determine the policy of the JOURNAL in the coming issues.

POPULAR MATERIAL

In the last few issues you have noted articles on photography, culture of Epiphyllums, notes on Mesembryanthema, cultural notes, etc. There will be more of such articles written for the student and those desiring less scientific material. We have endeavored to make the magazine non-sectional and we appreciate notes on culture from all parts of the world. Send in your questions and comments so that more may take an active part in recording their experiences in growing succulents.

SCIENTIFIC MATERIAL

With the descriptions of many new species that are frequently being published in our JOURNAL, there will never be a lack of scientific value. The JOURNAL is recognized by all the leading botanists and scientific institutions. It is this recording of new material that will make the JOURNAL of lasting value. Although some of the articles may seem too technical now, in a few months you will find them understandable and a rereading will be an added pleasure that could never be gained from too light or popular articles.

REPRINTING BRITTON AND ROSE THE CACTACEAE

October of this year will complete Vol. I of this monograph which is out of print and for which $50 to $100 for the single volume is being paid. Those who have not missed an issue during its three years of reprinting will have secured their volume for less than $9.00. We appreciate the cooperation of Carnegie Institution of Washington that has made this reprinting possible and we have endeavored to do well the work that was entrusted to us. Soon we shall have to decide if we shall continue with Vol. II and from the letters already received there seems to be sufficient interest. Vol. II deals with the Cereeae Tribe and these are of more general interest than the Opuntieae. Please communicate with the Editor and we will print the comments in the JOURNAL so that the membership may know what the best plan may be.

The San Fernando Cactus and Succulent Society unanimously passed a motion endorsing and requesting that Vol. II of the Cactaceæ be published in the Journal. This expression from the active San Fernando enthusiasts makes it possible for the Editor to definitely promise the publication of Vol. II.

MEMBERSHIP DRIVE

This year must show a decided increase in membership and if each member would send in one new subscriber we could double the size of our JOURNAL and thereby have space available for reprinting Vol. II without sacrificing the original material. We must give the amateurs more help in their work and by a larger membership we can devote more space to educational work. Will you take an active part in the Society and the JOURNAL this year?

Use the question page.

SCOTT E. HASELTON.

GRAFTING

By GILBERT TEGELBERG

Various methods are used in grafting cacti. There are, however, I believe, only two good reasons for doing so—to save the life of a sick plant and for quicker propagation of slow growing species.

I find the spring and summer months the best time for grafting cacti yet I have made successful grafts every month in the year, having had wonderful results with Epiphyllum during fall and winter months.

It is possible to save a cactus seedling the size of an ordinary pea, as well as a larger plant, even though rot has set in, by carefully cutting away all of the affected portion and grafting it to a clean and healthy plant. Do not give up hope if you discover that one or more of your choice plants is going bad. I believe that as long as there is life there is hope, and the feeling of satisfaction one gets after having successfully saved a rare plant is sufficient compensation for the efforts put forth.

If you are growing rare seedlings, I suggest that you also have on hand seedlings of *Cereus peruvianus, Trichocereus spachianus, T. macrogonus,* and rooted cuttings of *Selenicereus macdonaldiae* and *Nyctocereus serpentinus* of various sizes. They are very satisfactory grafting stocks. For large plants I find that *Trichocereus spachianus, T. macrogonus, Echinopsis multiplex, E. gemmata, Nyctocereus serpentinus, Opuntia subulata* and *Burbank's hybrid Opuntia* are very

good. *Pereskia pereskia* and *Selenicereus macdonaldiae* may be used to very good advantage for large as well as small plants. Seedlings of *Cephalocereus senilis, Espostoa lanata* and in fact, most any small seedlings do well on *Cereus peruvianus. Trichocereus spachianus* is an old standby, and I believe it to be one of the best all around grafting stocks we have, while *Selenicereus macdonaldiae* will furnish nourishment to most any grafted cacti as long as it is given reasonable care.

Use a clean sharp razor blade in grafting small seedlings and a good thin bladed sharp pointed knife for larger plants. I use the method of fastening or holding the union together which I believe can be best applied to the plant being grafted. The long strong spines of *Opuntia subulata* are very satisfactory in holding a scion when a cleft graft is made and common wrapping cord or raffia is also used to good advantage. On most all flat grafts I use an inverted "U" made of a flexible wire varying the size to that of the plant. The "U" should be long enough so that when it is placed over the grafted plant it will have sufficient anchorage in the soil to hold the graft firmly.

In making a flat graft, I use a stock which will compare in diameter with that of the plant I wish to graft, cutting the stock, or base plant, with as little sawing back and forth as possible. and making a similar cut on scion or top plant. It is also necessary to cut away any spine clusters and epidermis which would in any way interfere in making a good union. Then, placing the scion on top of stock take every precaution not to allow it to slip one way or another, by holding union with thumb and finger of left hand, while scion is being put in place and the wire "U" slipped over the center of scion and pressed down firmly. Sometimes it will be necessary to use two or more wire "U's" especially in grafting crests. There is no danger in leaving the "U" on for three weeks or a month as long as it is not too tight. Far better to leave it on a little longer than to remove it too soon. The graft should be inspected occasionally, especially if the scion was in a poor condition. Should it fail to take the first time it can be recut and regrafted. I have regrafted small seedlings as many as five times and been finally successful.

In grafting slender cuttings of Wilcoxia, Peniocereus, etc., a cleft graft is the strongest and easiest to make. Using an *Selenicereus macdonaldiae* as a stock, cut it off at desired height, then cut a wedge-shaped piece out of top and shape the bottom end of cutting to fit cleft, insert and hold with thumb and finger while you force a spine through both stock and scion. After this is done, it should be bound with cord or raffia to keep it from spreading apart. The spine should be removed in about a week and the cord in about three weeks.

I have found that Epiphyllums do best on Burbank's Opuntia hybrid and by using a tall strong stock of this Opuntia a beautiful plant can be made. On the extreme top end of the Opuntia, using a sharp pointed knife, cut out a wedge shaped piece; then cut the Epiphyllum joint at the butt end so that it will look as nearly as possible like the piece that had just been removed from the Opuntia. After this has been done, force the Epiphyllum joint into the socket and fasten with a spine. Should the Opuntia be a large plant, several grafts may be made on the sides of joints or pads, making cuts so that when the Epiphyllums are inserted and fastened with spines they will be hanging downward.

It is surprising what an enormous growth the Epiphyllums will make in a short period of time and also the increase in bloom which they will put forth when grafted in the manner just described. I have an old fashioned "Christmas cactus" on its own root system and it receives the best of care, yet it blooms but once during the year, however, cuttings taken from this lazy plant and grafted on Burbank's Opuntia hybrid seemingly have forgotten Christmas and bring forth blooms most every day of the year.

The slender Rhipsalis do very well on Pereskia and with these make a diagonal cut. By cutting both Pereskia and Rhipsalis at angles, which fitted together can be fastened with fine thread, no spine will be necessary. A tall Pereskia well supported and grafted in this manner makes a very beautiful plant.

Skill in grafting cacti can only be acquired by infinite patience and perseverance, but the results obtained are commensurate with your efforts.

EDITOR'S NOTE: *The* CACTUS JOURNAL *will be glad to publish other methods of grafting. Send photographs of the grafted plants or rough sketches of the methods used and Miss Kincher will make finished drawings.*

PUBLICATION DATE

The Journal is published the last of each month. Starting in October the publication date will be the 15th of each month.

THE HOUGHTON GARDENS offer their free list of Cacti and other succulents, from one of the oldest and best stocked gardens in California. 14714 Chatsworth Drive, San Fernando, Calif.

Pedilanthus macrocarpus Benth. Approx. x0.7

SUCCULENT-ILLUSTRATIONS

By ERIC WALTHER

No. 8. *Pedilanthus macrocarpus* Bentham

One of the many valuable introductions that have recently come out of Lower California through the efforts of our esteemed fellow-member Howard E. Gates is the subject of our present illustration. At first the plants seem most unprepossessing, their tangle of grey, mostly leafless stems resembling nothing so much as a heap of bones bleaching in the desert sun, sole memento of some unrecorded tragedy. At this stage the most interesting features are the peculiar texture of the epidermis and the milky juice typical of the *Euphorbiaceae*. But with the appearance of the flowers our curiosity is aroused, for these are certainly not the blossoms of any member of the genus *Euphorbia* known! As a matter of fact, while the queer, birdlike "flowers" are in reality the well-known involucral cup or cyathium of *Euphorbia*, here it has become bilaterally symmetrical instead of radially symmetrical. This unique form of involucre, deeply fissured above and containing the usual glands in the short spur, constitutes the quite sufficient distinction between *Euphorbia* and *Pedilanthus*. Perhaps more familiar is the better known *P. tithymaloides* Poit., often known as "Bird-cactus."

Our photo was taken in the always fascinating collection of friend E. O. Orpet of Santa Barbara, and besides several "flowers" shows one nearly mature fruit, our first meeting with the rather peculiar organ. The long beak is the persistent stylar column, and the unique prongs, 2 to each cell of the 3-celled ovary, are clearly visible. When full-grown the capsule may exceed one inch in length, fully deserving the name "large-fruited."

How many Malacocarpus are there?—A. M.

Britton and Rose recognize 29 species, all from South America and all found south of the equator.

Some descriptions of plants contain "line" as a unit of measure; how does the line compare with the metric system and the inch unit?

A line is one-twelfth of an inch; or French line, a tenth. Plant measurements should be in the metric system in the Latin descriptions and in inches in English descriptions. For comparison, 4 inches approximates: 48 lines; or 100 millimeters; or 10 centimeters; or one-tenth of a meter.

THE CACTUS BOOK
by
A. D. Houghton

From this book you will learn the secrets of successful watering, how to grow Cacti from seeds, how to propagate the rare species by grafting, how to hybridize, how to grow indoors in pots, and on window sills, how to purchase and trade to get new sorts and what kinds to grow for different effects. Also introduces you to more than 1,000 different kinds of Cacti with information for selecting the types you need for every purpose and location.

Price $2.25 Postpaid

Cactus & Succulent Society of America

The New Succulent Book

Information on succulents has been the after thought of writers of books on cacti, appearing at the end of the volume. As to illustrations, nothing has yet been done to compare with "Succulents". The book alone is worth the price—the illustrations almost a gift.

C. F. C., *Bakersfield.*

Succulents is a delightful book and I am very happy to own it. I have been trying for some time—first at the libraries, then at book stores—to get books on succulents, but was unsuccessful until I discovered this volume. I shall look forward to any supplements that may be issued.

E. M. B., *San Francisco.*

Opuntia parishii in its native habitat near the Desert Queen mine, close to the San Bernardino-Riverside County line. The two lower rows of joints are new growth, distinguished by their lighter color.

California Cacti

XIII. OPUNTIA PARISHII

By E. M. BAXTER

Opuntia parishii is California's species of the clavate, or club-shaped, group of Opuntias that is the transition form between the cylindric and lengthened *Cylindropuntia* and the South American sub-genus *Tephrocactus*—globular jointed plants.

The plant of this devil-cactus forms a mat not over six inches high but spreading for ten or more square feet. Never is the green of its stems to be seen, its dense, impenetrable armament of spines always hiding them from view. The joints are about three inches long, branching out from the lower third of the next older joint and making a curve out around the tip

of the parent and matching it in height and armament. An occasional twin joint will grow from an adjoining areole and the mat is well started with the intermingling of the twins' spines.

Each branch is covered with long, narrow, high tubercles. The areole at the upper edge of each tubercle bears three sets of spines and one of glochids. There is a broad flat or angled central spine, an encircling ring of rounded or angled spines of only slightly lesser size, a lower set of needle-size spines, and finally, around the outer edge of the areole, a ring of stiff glochids up to three-eights of an inch long. spines in new growth are of varying colors of dark red, pinkish, and related shades but soon fade to the true-gray of dead desert grass. In fact, the old spines so resemble blades of matted grass that I missed finding this species on one expedition when I did not recognize its real identity.

Plants grow in a wide area over the California deserts but only in separated favorable locations. They seem to prefer an elevation over 3000 feet and the north slope of desert ranges near the base of canyon washes. *Opuntia chlorotica* and *Echinocereus mojavensis* grow in the canyons above its range. I found the mat pictured here on the ranch of Bill Keys over the range to the south of 29 Palms.

Fruit are a large edition of that of *Opuntia ramosissima.* They are two inches long by an inch in diameter, and oval in outline. The fruit is strongly tuberculate, very similar to its branch support. It differs greatly from a branch, though, in its armament. There are no spines on a fruit, but a complete covering of varied-length bristles that hide the fruit from view. The yellow bristles spring from an areole filled with white wool that shows through at the center of the cluster. I have not seen the flower of this species, but it has been reported to me very reliably that it is a brick-red of the same shade as that of *Echinocereus mojavensis.* Dried flowers on matured fruit seem to bear out this report. The fruit are born from the young uppermost areoles of a joint. Seeds are light brown in color, circular and relatively thin with the flat surfaces irregular, very tightly packed with little pulp in the capsule.

As new joints develop they root along the surface in contact with the desert sand. This gives us our tip on cultivation of garden plants. Cuttings may be rooted by being laid lengthwise on the surface of decomposed granite and leaf mold mixed. Water should only be applied at the soil surface, and then only in very sparing quantities.

The *Clavatae* Series extends from California through Arizona, New Mexico, and Texas into central Mexico. Another member of this Series might be found in California, but I have never seen it nor heard of its occurrence here. That species is *Opuntia pulchella* that is found in Nevada and Arizona.

Opuntia parishii may be readily distinguished from all of the other species of the Series by its covering of spines, which is heavier and longer than that of any related species.

PRESIDENT'S COLUMN

By CHARLES GIBBS ADAMS, *President*

The New Affiliated Societies

It is gratifying to report that, at the Society's general meeting, held on June seventeenth at Hawthorne, California, in the extensive Cactus gardens of Mr. Carl Seelbach, all the amendments published in the April Journal, and aimed at the Society's advancement, and at the general good of the cause of cacti and other succulents, were adopted by unanimous vote.

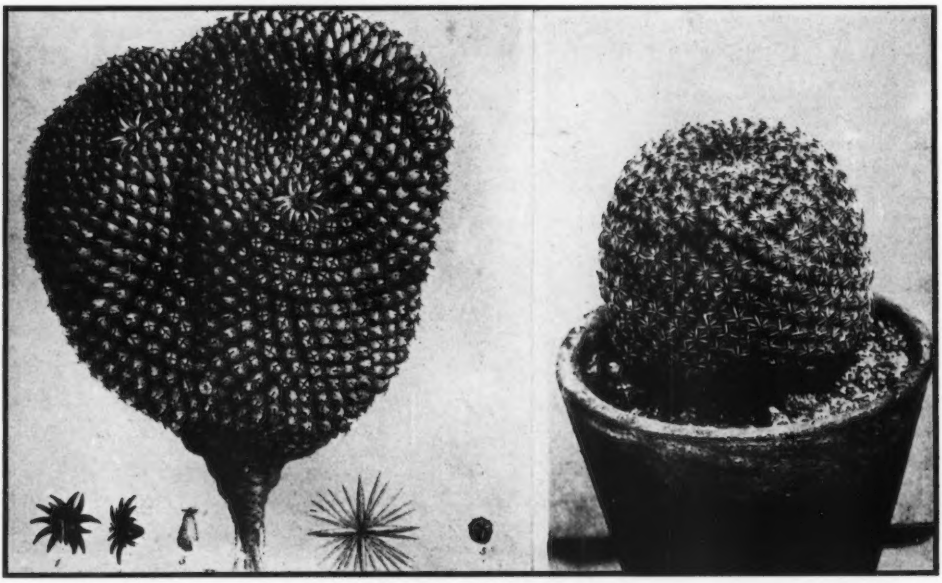
It is believed that the one of paramount importance, both to the national body, and to the independent local clubs, is that offering the advantages of economical affiliation.

A few of the more obvious of said advantages are, of course, the bringing to the main body—(already hailed as the world's leading organization of its kind)—the added strength of numbers, plus the ideas, enthusiasm and inspiration of new minds. To the new branches, it adds money for their treasuries, cheaper subscriptions to the national Journal, representation in the general meetings, participation in the outings and instructive pilgrimages of the Society, entree to distinguished gardens closed to the general public, etc.

Since the passage of this measure, your President has been notified that Santa Monica, California, is organizing a local club, in hopes of affiliation. Also, he has accepted invitations to journey to Baldwin Park, California, to address the annual picnic-supper meeting of the San Gabriel Valley Cactus Society; and to Long Beach to speak to the Cactus Club of that city, on their anniversary meeting, in President Cramer's attractive gardens. These two have been among the most live clubs of their kind to be found anywhere. The latter boasts a Junior annex of half a hundred enthusiastic juveniles, —a noble example; may it be followed widely.

At the San Gabriel Valley party, there were repeated expressions of hopes to join, at a very early business meeting; while, at the Long Beach assembly, the club immediately and unanimously voted to affiliate. Thus, the club of the famous seaport and resort, gave itself the honor of becoming Number One Affiliated Club.

Beside these clubs of Santa Monica, Long Beach, and the San Gabriel Valley, your President is receiving many unofficial messages from members of clubs that hope, or mean, to join at a very early date. Conspicuous among them have been messages or calls from enthusiastic members of the club of San Fernando Valley, California, Phoenix, Arizona, San Antonio, Texas, and even a group in New Jersey. Thus a boom of new enthusiasm seems to have started, which the already flourishing national Society will meet with open arms.



LEFT: *Mammillaria crucigera* Mart. as published with the original description in 1832. RIGHT: Photo of the plant which was received from F. Schmoll.

Mammillaria crucigera Mart.

By ERNEST TIEGEL
Duisburg, Germany

EDITOR'S NOTE: Britton & Rose do not recognize the generic name of Mammillaria in the Cactacaea. The American nomenclature should therefore be Neomammillaria.

Mammillaria crucigera Mart. was introduced in 1832 in Europe and described in the same year. Apparently this species was never seen after the death of those few plants imported in 1832.

In the beginning of 1933, I received from Mr. F. Schmoll, Caderayta, Mexico, with other rare and new species, a plant which I recognized as the *M. crucigera* Mart. and show, herewith, a picture of it. It corresponds exactly with the original description by Prof. Dr. Martius and with the picture published at that time. This solves the long disputed problem of the *M. crucigera.*

Not long ago a form of *M. formosa* Gal. (Scheidw.) 1838, was called *M. crucigera.* It is not right, from a scientific point of view, to change the original description of its foundation. This one remains forever and I have only to add the description of fruit and seed, which Dr. Martius probably had not observed.

Fruit small, slenderly tapered, 6-8 mm. long, slightly red. Seed tiny, 0.7 mm. thick, yellow-

ish brown, naval bias cut and a little elliptic, on account of the seed being flat on both sides.

The original description is hard to get. I refer to its translation from Latin, by L. Quehls, published in the Monatsschrift für Kakteenkunde (1909, page 190). Mr. Quehl commented that the plant had milky juice, but this did not prove right with regard to the regained specimen. Here again I refer to the original description (in Latin) very closely.

The report of the collector might be of special interest:

"The biggest specimen which we found was about 10 cm. wide and 8 cm. high, and had, by dividing of the crown, several heads. This is typical in older plants. No offsets were observed. This species grows on cliffs in the State of Oaxaca, Mexico.

This beautiful, long missed and disputed plant will be seen again very soon in the collections. It is easy to recognize by the small tubercles and the remarkable small spines that are only 1.5 mm. long. This plant has been sold recently by Ferdinand Schmoll as *M. Kluggii* and he requests that this name be corrected to *crucigera.*

What Grows Where

Cacti Listed in Accordance With Their Geographical Origin
Compiled and Copyrighted for Mrs. John D. Wright, Santa Barbara, Calif., 1933

By ANNE SMITH

SOUTH CAROLINA

OPUNTIEAE TRIBE

OPUNTIA

SUBGENUS 3. PLATYOPUNTIA

Tortispinae Series

O. macrarthra
Type Locality: Near Charleston, South Carolina.
Distribution: Coast of South Carolina.

Dillenianae Series

O. dillenii
Type Locality: Based on Dillenius's illustration.
Distribution: Coasts of South Carolina, Florida. Bermuda, the West Indies, east coast of Mexico, and northern South America; extending inland in Cuba.

SOUTH DAKOTA

OPUNTIEAE TRIBE

OPUNTIA

SUBGENUS 3. PLATYOPUNTIA

Tortispinae Series

O. tortispina
Type Locality: On the Camanchica Plains near the Canadian River.
Distribution: Wisconsin to South Dakota, Texas, Kansas, Colorado, and New Mexico.

CEREEAE TRIBE

SUBTRIBE 3. ECHINOCEREANAE

Echinocereus

E. viridiflorus
Type Locality: Prairies about Wolf Creek, New Mexico.
Distribution: Southern Wyoming to eastern New Mexico, western Kansas, western Texas, and South Dakota.

TENNESSEE

OPUNTIEAE TRIBE

OPUNTIA

SUBGENUS PLATYOPUNTIA

Tortispinae Series

O. opuntia
Type Locality: In Virginia.
Distribution: Sandy and rocky places from Massachusetts to Virginia, the mountains of Georgia and central Alabama extending north into southern Ontario, Canada (Point Pelee), west in isolated colonies to northern Illinois, eastern Missouri and Tennessee, and long established in the mountains of northern Italy and Switzerland.

ADVERTISING RATES

$1.50 an inch. Mail ads to the Editor, 6162 North Figueroa St., Los Angeles, Cal., by the first day of the month of issue. Patronize Journal advertisers and please mention the Journal. Illustrations furnished by advertisers will be published when accompanied by an informative article.

This is to cancel any special offers and discounts for new memberships. The price of the Journal and membership in the Society is $3.00 per year. Mail subscriptions to H. Weston, 6162 North Figueroa St., Los Angeles, Cal.

INDEX TO VOL. V

The index for the last 12 issues will be mailed to every member with the August issue of the Journal.

—Editor.

"THE STUDY OF CACTI"

By V. Higgins. Britton & Rose genera are explained. Great Britain's great contribution to Cactus literature. Mailed locally, $1.95.

EDGAR BAXTER
Bellflower, California

LEMAIREOCEREUS QUERETAROENSIS — Mature plants 4 to 6" diameter, 1 ft. $3.00; 2 ft. $6.50; 3 ft. 10.00. L. griseus, 3 to 4" diameter, same price, f.o.b. here. **Rio Grande Valley Cactus Garden,** J. R. Pirtle & Sons, Edinburg, Texas.

BINDING VOL. V.

The Cactus Journal, Vol. V, is now ready for binding. Send your 12 copies to the Editor during the month of August together with $1.50 and your magazines will be bound the same as the preceding four volumes. If you do not want the Britton and Rose reprint bound in with your Volume V, remove that section carefully and retain it for binding later. If you have complete sets of volumes I, II, III or IV that you wish to have bound, send them in with Vol. V and send an additional $1.50 for each volume. The binding will be completed during the month of September and returned to you postpaid by September 30th. Please mail your Journals to G. A. Frick, 1800 Marengo St., Los Angeles, Cal.

THE STAPELIEAE

By Alain White and Boyd L. Sloane
The most complete and up-to-date monograph on Stapelias. 224 pages, 8 x 11 with 250 illustrations. Printing and binding are the best that can be secured. $3.00
White and Sloane Stapelia Collection
1421 Dominion Ave., Pasadena, Calif.

CACTUS AND ROCK GARDEN PLANTS from Texas' largest collection. Lists wholesale and retail, also seeds. SHINER CACTUS NURSERY, Box 2, Laredo, Texas.

•

CACTUS SEEDS. 1934 collected South American and Mexican seed just received. Many new species. List free. Note new address: R. W. KELLY, 638 W. Wilson Ave., Glendale, Calif. Phone Douglas 6486.

•

FOR SALE—A limited number of the rare **Neomammillaria wrightii,** $1 to $3, postpaid on live, moist roots. Smallest blossoming size, $1.25.
CLEVE HALLENBECK, Box 511, Roswell, New Mex.

•

SUCCULENTS

50 different succulents from Madagascar, Mexico and Africa, $2.25. Any part pro rata. 100 different, $5.00. Postpaid. Satisfaction guaranteed. SPECIAL BARGAINS: Echeveria sanguinea 25c, nobilis 5c, elegans 5c, weingarte 15c, hoveyi 5c, Crassula punctata 10c, falcata 15c, longifolia 15c, monticola 5c, Dudleya lanceolata 5c, pulverulenta 5c, Stylophyllum orcutti 5c, edule 5c, Aloe brevifolio 5c, nobilis 10c, humilis 5c, distans 15c, variegata 15c, Haworthia cymbiformis 5c, attenuata 15c, margaretifera 5c, Caralluma lutea 5c, pseudobrounii 5c, Faucaria haageii 20c, felina 15c, lupina 15c, Huernia schneideriana 5c.
CHARLES L. CASS NURSERY, Pacific Beach, Cal.

•

SPECIAL THIS MONTH

8 seedlings of foreign cacti $1 postpaid: 5 Cerei (eburinus, chichipe, terlschecki, geometrizans, candicans). Coryphantha erecta, Echinocactus pillosus, Neomammillaria compressa. 16 varieties $2.00.
KNICKERBOCKER NURSERY, R. 1, San Diego, Cal.

•

FOR REAL PLEASURE, SPECIALIZE. Try making complete collections of certain varieties. Am offering 10 named var. Rhipsalis, $1.25. 6 named var. Haworthias, $1.20. 8 dif. Gasterias, $1.00. 20 dif. Stapelias, $2.00. 10 named var. Euphorbias, $1.80. 8 named var. Echivarias, $1.00. Many others. Send for list. W. L. HAGENBAUGH, 1934 Comstock Ave., W. Los Angeles, Calif.

•

A NEW SUCCULENT BOOK

The first American book on Succulents other than Cacti. 140 natural color illustrations, written so the amateur can name his plants. Send for a copy on approval, $5.00. Abbey San Encino Press, 6162 North Figueroa St., Los Angeles, Cal.

•

BOOKS

OUR NATIVE CACTI—By Ethel Bailey Higgins..$2.50
CACTUS—By Laura Adams Armer..... 1.50
THE CACTUS BOOK—By Dr. A. D. Houghton.... 2.25
CACTUS CULTURE—By Ellen D. Schulz..... 2.00
ARIZONA CACTI—By William P. Stockwell and Lucretia Breazeale..... .45
THE STAPELIEAE—By Alain White and Boyd L. Sloane..... 3.00
BIRDS OF CALIFORNIA—Regular price $25.00 for three volumes, special to readers of Cactus & Succulent Journal, $10.25 for the three volumes post paid.

Mail Address: THE CACTUS JOURNAL, 6162 North Figueroa St., Los Angeles, Calif.

CHICAGO INVITES YOU TO ATTEND THE HORTICULTURAL EXHIBITS AT THE CENTURY OF PROGRESS EXPOSITION DURING SUMMER 1934.